



ILEWG Rationale and Roadmap for Lunar Exploration

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We discuss the different rationale for Moon exploration, as debated at ILEWG. This starts with areas of scientific investigations: clues on the formation and evolution of rocky planets; accretion and bombardment in the inner solar system; comparative planetology processes (tectonic, volcanic, impact cratering, volatile delivery), astrobiology, survival of organics; past, present and future life. The rationale includes also the advancement of instrumentation: Remote sensing miniaturised instruments; Surface geophysical and geochemistry package; Instrument deployment and robotic arm, nano-rover, sampling, drilling; Sample finder and collector. There are technologies in robotic and human exploration that are a drive for the creativity and economical competitiveness of our industries: Mecha-electronics-sensors; Tele control, telepresence, virtual reality; Regional mobility rover; Autonomy and Navigation; Artificially intelligent robots, Complex systems, Man-Machine interface and performances. Moon-Mars Exploration can inspire solutions to global Earth sustained development: In-Situ Utilisation of resources; Establishment of permanent robotic infrastructures, Environmental protection aspects; Life sciences laboratories; Support to human exploration.